

We claim:

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1 ~~A1~~ 1. An isolated nucleic acid molecule including a sequence encoding an
2 acquired resistance polypeptide, wherein said acquired resistance polypeptide is capable
3 of conferring, on a plant expressing said polypeptide, resistance to a plant pathogen.

1 2. The isolated nucleic acid molecule of claim 1, wherein said polypeptide is
2 capable of mediating the expression of a pathogenesis-related polypeptide.

1 3. The isolated nucleic acid molecule of claim 1, wherein said polypeptide
2 comprises an ankyrin-repeat motif.

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1 *A2* 4. The isolated nucleic acid molecule of claim 1, wherein said polypeptide is
2 obtained from an angiosperm.

1 5. The isolated nucleic acid molecule of claim 4, wherein said angiosperm is a
2 member of the *Solanaceae*.

1 6. The isolated nucleic acid molecule of claim 4, wherein said angiosperm is a
2 member of the *Cruciferae*.

1 7. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid
2 molecule is genomic DNA.

1 8. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid
2 molecule is cDNA.

1 9. The isolated nucleic acid molecule of claim 1, wherein said plant pathogen
2 is a bacterium, virus, viroid, fungus, nematode, or insect.

1 *Sub A3* 10. An isolated nucleic acid molecule that encodes an acquired resistance
2 polypeptide that specifically hybridizes to a nucleic acid molecule comprising the
3 genomic nucleic acid sequence of Fig. 4 (SEQ ID NO:1). ✓

1 11. An isolated nucleic acid molecule that encodes an acquired resistance
2 polypeptide that specifically hybridizes to a nucleic acid molecule comprising the cDNA
3 of Fig. 5 (SEQ ID NO:2). ✓

1 12. An isolated nucleic acid molecule that encodes an acquired resistance
2 polypeptide that specifically hybridizes to a nucleic acid molecule comprising the DNA
3 sequence of Fig. 7A (SEQ ID NO:13). ✓

1 13. The isolated nucleic acid molecule of claims 10-12, wherein said nucleic
2 acid molecule encodes a polypeptide that mediates the expression of a pathogenesis-
3 related polypeptide.

1 14. The isolated nucleic acid molecule of claims 10-12, wherein said nucleic
2 acid molecule encodes a polypeptide comprising an ankyrin-repeat motif. ✓

1 *Sub A4* 15. The isolated nucleic acid molecule of claim 1 or 10-12, wherein said
2 nucleic acid molecule is operably linked to an expression control region.

1 16. A vector comprising the nucleic acid molecule of claim 1 or 10-12, said
2 vector being capable of directing expression of the polypeptide encoded by said nucleic
3 acid molecule.

- 1 17. A cell comprising an isolated nucleic acid molecule of claim 1, 10-12, or
2 16.
- 1 18. The cell of claim 17, wherein said cell is a plant cell.
- 1 19. The cell of claim 17, wherein said cell is a bacterial cell.
- 1 20. The cell of claim 19, wherein said bacterial cell is *Agrobacterium*.
- 1 21. The cell of claim 18, wherein said plant cell has increased resistance to a
2 plant pathogen.
- 1 22. A transgenic plant comprising a nucleic acid molecule of claim 1, 10-12,
2 or 16, wherein said nucleic acid molecule is expressed in said transgenic plant.
- 1 23. The transgenic plant of claim 22, wherein said transgenic plant is an
2 angiosperm.
- 1 24. The transgenic plant of claim 22, wherein said transgenic angiosperm is a
2 dicot.
- 1 25. The transgenic plant of claim 24, wherein said dicot is a cruciferous plant.
- 1 26. The transgenic plant of claim 24, wherein said dicot is a solanaceous
2 plant.

1 27. The transgenic plant of claim 23, wherein said transgenic angiosperm is a
2 monocot.

1 *Sub A5* 28. A seed from a transgenic plant of claim 22.

1 29. A cell from a transgenic plant of claim 22.

1 30. A substantially pure acquired resistance polypeptide including an amino
2 acid sequence that has at least 40% identity to the amino acid sequence of Fig. 5 (SEQ ID
3 NO:3) or Fig. 7B (SEQ ID NO:14).

1 31. The of substantially pure polypeptide claim 30, wherein said polypeptide
2 is capable of mediating the expression of a pathogenesis-related polypeptide.

1 32. The substantially pure polypeptide of claim 30, wherein said polypeptide
2 includes an ankyrin-repeat motif or a G-protein coupled receptor motif.

1 33. The substantially pure polypeptide of claim 30, wherein said polypeptide
2 is obtained from an angiosperm.

1 34. The substantially pure polypeptide of claim 33, wherein said angiosperm
2 is a member of the *Solanaceae*.

1 35. The substantially pure polypeptide of claim 33, wherein said angiosperm
2 is a member of the *Cruciferae*.

1 *Sub A6* 36. A method of producing an acquired resistance polypeptide, said method
2 comprising the steps of:

- 1 (a) providing a cell transformed with a nucleic acid molecule of claim 1;
2 10-12, or 16 positioned for expression in the cell;
3 (b) culturing the transformed cell under conditions for expressing the nucleic
4 acid molecule; and
5 (c) recovering the acquired resistance polypeptide.

1 37. A recombinant acquired resistance polypeptide produced by the method
2 of claim 31.

1 38. A substantially pure antibody that specifically recognizes and binds to an
2 acquired resistance polypeptide or a portion thereof.

1 39. The substantially pure antibody of claim 38, wherein said antibody
2 recognizes and binds to a recombinant acquired resistance polypeptide or a portion
3 thereof.

1 *Sub A7* 40. A method of providing an increased level of resistance against a disease
2 caused by a plant pathogen in a transgenic plant, said method comprising the steps of:
3 (a) producing a transgenic plant cell including the nucleic acid molecule of
4 claim 1, 10-12, or 16 wherein said nucleic acid is positioned for expression in the plant
5 cell; and
6 (b) growing a transgenic plant from the plant cell wherein the nucleic acid
7 molecule is expressed in the transgenic plant and the transgenic plant is thereby provided
8 with an increased level of resistance against a disease caused by a plant pathogen.

1 41. The method of claim 40, wherein said plant pathogen is a bacterium,
2 virus, viroid, fungus, nematode, or insect.

1 42. The method of claim 40, wherein said plant pathogen is *Phytophthora*,
2 *Peronospora*, or *Pseudomonas*.

1 43. A method of isolating an acquired resistance gene or fragment thereof,
2 said method comprising the steps of:

3 (a) contacting the nucleic acid molecule of Fig. 4 (SEQ ID NO:1), Fig. 5 (SEQ
4 ID NO:2), or Fig. 7A (SEQ ID NO:13) or a portion thereof with a preparation of DNA
5 from a plant cell under hybridization conditions providing detection of DNA sequences
6 having at least 40% or greater sequence identity to the nucleic acid sequence of Fig. 4
7 (SEQ ID NO:1), Fig. 5 (SEQ ID NO:2), or Fig. 7A (SEQ ID NO:13); and

8 (b) isolating said hybridizing DNA.

1 44. A method of isolating an acquired resistance gene or fragment thereof,
2 said method comprising the steps of:

3 (a) providing a sample of plant cell DNA;

4 (b) providing a pair of oligonucleotides having sequence identity to a region
5 of the nucleic acid of Fig. 4 (SEQ ID NO:1), Fig. 5 (SEQ ID NO:2), or Fig. 7A (SEQ ID
6 NO:13);

7 (c) contacting the pair of oligonucleotides with said plant cell DNA under
8 conditions suitable for polymerase chain reaction-mediated DNA amplification; and

9 (d) isolating the amplified acquired resistance gene or fragment thereof.

1 45. The method of claim 44, wherein said amplification step is carried out
2 using a sample of cDNA prepared from a plant cell.

1 46. The method of claim 44, wherein said pair of oligonucleotides are based

- 1 on a sequence encoding an acquired resistance polypeptide, wherein the acquired
- 2 resistance polypeptide is at least 40% identical to the amino acid sequence of Fig. 5 (SEQ
- 3 ID NO:3) or Fig. 7B (SEQ ID NO:14).

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